UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGIONS 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

August 15, 2006

Mr. Jerry C. Winslow
Principal Environmental Engineer
Xcel Energy
414 Nicollet Mall (Ren. Sq. 8)
Minneapolis, Minnesota 55401

REPLY TO THE ATTENTION OF:

SR-6J

RE: Comments on the Draft Human Health Risk Assessment
Ashland/NSP Lakefront Superfund Site

Dear Mr. Winslow:

The United States Environmental Protection Agency (EPA) has completed its review of the draft Human Health Risk Assessment (HHRA) submitted on behalf of Northern States Power Company/Xcel Energy by URS on April 7, 2006 for the Ashland/Northern States Power Lakefront Superfund Site. Our comments are provided below:

General Comments

1. Was sediment, fish and soil data from SEH risk assessments included in this HHRA? Data from these documents should also be included in the HHRA, especially since only 2 sediment samples were evaluated in the HHRA.

2. The HHRA does not appear to address the exposure risk to free product found at several locations. Therefore, it is assumed that removal of the free product will be addressed in the Remedial Action Objectives (RAOs) and Feasibility Study (FS).

3. The use of a 95% Upper Confidence Limit (UCL) can dilute out the contaminant concentrations, resulting in an underestimation of risk.

4. Samples above screening levels even if below background should be retained in the HHRA per U.S. EPA (2002) guidance (*Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites,* EPA-540-R-01-003).

5. Human health RAOs presented in the RI/FS (Appendix A) will need to be adjusted after the HHRA is corrected.

6. The report should include a list of all parameters analyzed for each matrix. Without a list in the document, a reader is left wondering what contaminants each sample was analyzed for when faced only with a table of detects.

7. Were calculations made for Adult consumers of fish only? Also, considering the detection of Chemical of Potential Concern (COPCs) above health-based concentrations some discussion should be included about how well the calculations actually reflect the local consumption pattern particularly as it relates to smelt. Fish are often consumed in

large amounts (200 to 300 grams per meal) very frequently in season and frozen for meals during the year. Great Lakes Indian Fish and Wildlife Commission have done several fish consumption studies and could supply more information.

8. Some of the individual parameters exceed health-based concentrations in the fish at the reference sites yet this is not discussed in the narrative (Table 18). This issue deserves more discussion as to where these samples were taken and the information on site related chemicals being detected in the tissue above health-based concentrations.

9. All Tables – ensure all units are consistent. For example, Table 18 lists range of detections in mg/Kg while limits are in ug/Kg.

10. The concluding quantification of the risk of fish consumption was on the border of EPA acceptability at 1×10^{-4}. Therefore, the narrative needs more information explaining why this isn't considered an unreasonable risk. Also, the summary table of risk calculations for finfish is missing though it is listed in the Tables list as Table 32.

11. The report needs an executive summary and introductory tables that clearly summarize: 1) chemicals of potential concern; 2) the receptors being examined; 3) exposure scenarios; and 4) the risk findings of the draft HHRA report. The summarized Reasonable Maximum Exposure (RME) risk table on Page 5-2 did not include health risk estimates for surface water, even though this pathway was evaluated as part of the risk assessment process.

12. Regarding the Data Review Protocol (Section 2.1, Page 2-1), the draft HHRA report needs to comprehensively describe all the environmental investigations and related reports that provided data used in the document. The narrative also needs to include a description of which data were used, which were not used, and why. As mentioned above, it is evident that not all environmental data from prior investigations were included in the draft HHRA report, which is a shortcoming of the risk assessment.

13. The Risk Characterization Results (Page 5-1) implies that a cancer risk of 1×10^{-4} falls within an acceptable range. However, the draft HHRA report described unacceptable cancer and non-cancer risks only for residential exposures to soils and construction worker exposure to soils, the RME table on page 5-2 shows an unacceptable cancer risk (1×10^{-4}) for subsistence fishers, but this was not discussed in the narrative. The supporting summary table (Table 32) for subsistence fishers is missing in the document, but the supporting risk calculations for subsistence fishers also report an unacceptable risk of 1.29×10^{-4} (Attachment D, Table 29a). Additionally, there is a variation of 0 to 2 significant digits used amongst the calculations in risk tables and there should be consistency throughout the report. For example, with the above referenced Table 29a, risk calculations are reported with 2 significant digits, but when described in the summary table there are 0 significant digits. A discrepancy with the number of significant digits was also noted for the various CTE tables summarizing and detailing the risk calculations for the residential soil risks (Table on page 5-5, Table 33 and Attachment E, Table 1a). This needs to be clarified.

For the CTE risk table on page 5-5, there were notable discrepancies of the calculated risks for both Resident and Construction Worker with the supporting documentation in Table 33. On page 5-5 the Resident cancer risk and hazard index was 5 x 10^{-4} and 1, respectively, but on Table 33 these were reported as 1 x 10^{-4} and 4. For Construction Worker, on page 5-5, the hazard index was reported as 0.5, but on Table 34 it was reported as 1.36. This needs to be clarified.

14. The tables appearing at the end of the report narrative were not always properly or accurately labeled, and some tables were missing (*Table 22 – Recreational Adolescent – Surface Soil, Table 32, Fisher Finfish*) in both the hard copy and electronic version of the document. Some tables did not clearly list the media being evaluated (Table 28 – Industrial Worker Risk Summary). When comparing the narrative of the draft HHRA with corresponding portions of the draft RI report, the important narratives present in the draft RI report were absent in the draft HHRA report, particularly regarding the Surface Water section (1.3.3). This needs to be clarified.

15. As part of the HHRA review, we needed to examine 2005 data referenced in the appendices of the draft RI report. Environmental sampling data was poorly presented and summarized in the RI report, which inhibits HHRA readers from locating and reviewing data and, as a result, difficult to determine the degree and extent of contamination. Portions of the appendices in the RI report were not well organized, with some important data difficult to read or missing. For media-specific data that was collected in 2005 and reported in the draft RI report, there were no media-specific tables that clearly summarized the data. It was difficult to extract this information from the "Statistical Data Summary" tables. For some data, we could not locate the summary data, supporting documentation, nor the laboratory reports in the draft RI report. For example, we were unable to locate the analytical results for sediments in Appendix E4 of the draft RI report, as well as the laboratory data sheets and chain-of-custody reports.

Media and Pathways

Surface Water

16. Despite efforts described under the draft RI report to characterize worst case surface water impacts from affected sediments, the draft HHRA report did not use all previously collected surface water data, as a result, did not fully assess the human health risks of surface water. The narrative section should address the issue in detail, but was not done. Additionally, the Site Description Section narrative for Surface Water (1.3.3) was missing much of the relevant discussion that appeared in the corresponding section of the draft RI report.

    Evaluating exposures to contaminated surface water has been challenging at the site due to a limited number of samples collected when natural factors caused the release of tar slicks. On November 15, 2005, during RI sampling activities, surface water samples were collected shortly after a tar slick was reported and photographed by a citizen, however, no slicks were observed by sample collectors and the subsequent data does not indicate notable surface water impacts. The draft HHRA report does discuss a single surface water sample collected during a "high wave" event in 1998 by SEH, which had

high levels of PAHs. While the draft HHRA report notes a shortcoming with this water sample, the SEH surface water data is apparently rejected from use in the HHRA as it does not appear in any of the risk calculations.

Despite the limitations of this single sample and difficulties of collecting data that documents these events, the draft HHRA report should not dismiss or ignore a number of cases reporting these slicks without declaring the absence of the data as a shortcoming of the report, particularly when this is contrary to the findings of the 1998 SEH HHRA report. The 1998 SEH report calculated unacceptable levels of current and future health risks for workers, trespassers, and people engaged in recreational activities on the site. The draft HHRA report should have discussed each component of the 1998 HHRA and where it differed with the findings, particularly regarding surface water. Simply excluding the 1998 surface water information and data from use in the risk assessment and risk calculations is not acceptable. Since this exposure pathway poses one of the greatest potential health risks at the site, the draft HHRA report needs a thorough narrative and evaluation on this media and exposure pathway, including the possible incorporation of surface water data that was left out.

The draft HHRA report excluded certain data, used data inappropriately, or did not include important factors in calculating risks. Additionally, the report did not differentiate between current and future health risks posed by contamination at the site. This needs to be clarified.

Sediments

17. Despite the large number of sediment samples that have been collected over a number of years at the site, the draft HHRA report relied on only 2 sediment samples in calculating health risks. When looking at the draft RI report for sediment data that was collected in 2005, we were unable to find media-specific tables providing either detailed or summarized data. We were also unable to find data for these two samples from the "Statistical Data Summary" tables. And we could not locate in the draft RI report the analytical results for sediments in Appendix E4, as well as the laboratory data sheets and chain-of-custody reports. This needs to be clarified.

    The draft HHRA report introduced new criteria that excludes important sediment data from being used in risk calculations of the Recreational scenarios and underestimates the health risks. While not addressed previously nor in the RI Work Plan, for the Recreational Scenario the draft HHRA report selected sediment data that only met the criteria of "between 0.0 to0.5 foot in depth and 3 feet or less of surface water...based on wading activities, where it was assumed that receptors would not dig into the sediment." This selection criteria was also not previously considered nor proposed in the RI work plan. Since no on-site sediment data were used in evaluating the recreational exposure scenario, it can be inferred that no on-site sediment samples meet the criteria and raises questions about the relevance of this selection criteria. Additionally, assuming that "receptors would not dig" counters several anecdotal reports of visitors to the park who waded into the water to collect drift wood stuck deep in sediments. Finally, this selection criteria excludes at least 9 sediment samples previously collected by URS that were in 3

feet or less of water and were collected between 0.0 to 2.0 feet in depth, which is relevant to this exposure scenario.

In calculating the risks for the recreational exposure scenario, two sediment samples (NSP-SE-SS-14 & 2300N-3200E) were collected from locations that were over 600 feet east of the site boundaries and even further from the closest known areas of impacted sediments. It clearly appears that these two sediment samples were collected to provide background data on sediments. The use of only two background sediment samples in calculating health risks to impacted on-site sediments is unacceptable. Please use the existing on-site sediment data in the HHRA.

Receptors and Exposure Scenarios

Trespassers

18. Trespasser exposures were not evaluated in the draft HHRA report as proscribed in the RI Work Plan. The RI Work Plan stated that the health risks for trespassers would be evaluated for gaining entry to the Waste Water Treatment Plant (WWTP) and being exposed, via ingestion, inhalation, and dermal contact, to contaminated groundwater that has infiltrated into the lower portions of the facility. However, the draft HHRA report only addressed the issue of trespassers as those coming in contact with contaminated groundwater at the former seep area, and concluded that since there was an interim response at the seep area in 2002, the trespasser "exposure pathway is no longer complete and was not quantitatively evaluated in the HHRA." The failure to evaluate the trespasser's health risks at the WWTP is a shortcoming of the draft HHRA report.

Construction Workers

19. For the receptors "Construction Workers" under the "Industrial/Commercial Land Use Scenario," they were not adequately assessed in the draft HHRA report. The RI Work Plan and draft HHRA report stated, "It is conservatively assumed that construction activities could take place at every area in (the) evaluation" including ingestion, inhalation, and dermal contact. However the report did not examine exposures via certain media and also omitted key exposure factors in the estimation of risks for Construction Workers coming in contact with affected media at the site. This could result in an underestimation of risks.

    In the draft HHRA report, dermal risk calculations related to PAHs (polycyclic aromatic hydrocarbons) in sub-surface were not conducted for Construction Workers (Attachment D, Table 20a), however, dermal risks were calculated for maintenance workers for carcinogenic PAHs (Attachment D, Table 17a). The cancer slope factor for the carcinogenic PAHs were included in Table 17a, but in Table 20a were noted as "No Value available," resulting in missing dermal risk estimations for Construction Workers. One of the primary health concerns caused by direct contact with PAHs and coal tars is how they adversely affect the skin. Dermal contact with PAHs and coal tars are known to result in skin irritation, heighten dermal photo-toxicity, and increase risks of several skin cancers. Not evaluating dermal exposures to PAHs underestimates the health risks posed to Construction Workers.

The draft HHRA report also did not evaluate any health risks to Construction Workers related to exposures with shallow groundwater at Kreher Park. The report designated 10 feet as the maximum depth to which sub-surface soil data would be excavated by those working on utilities. However, sub-surface soil investigations in Kreher Park of often encounter groundwater at depths of 3 to 5 feet. Additionally, it is common for odorous oily sheens, slicks, tars, and NAPLs to be present in shallow on-site groundwater (as described in Table 2-1 and soil boring logs in Appendix B3 of the draft RI report). Consequently, not evaluating the health risks for Construction Workers for exposures to contaminated groundwater is a shortcoming in the draft HHRA report.

Specific Comments

1. **Section 2.0:** The narrative states in section 1.2 that historical data was used to complete the HHRA. Where is past data included in the calculations?

2. **Section 2.3.2, page 2-6:** Ensure that risk-based screening levels obtained from all sources are based on a target cancer risk of 1E-06.

3. **Section 2.3.2, page 2-6:** Selection of Risk-based screening concentrations (RBSCs) for cesium-37 and lead-210 is discussed in this section, however, beyond this presentation and a toxicity profile for Cs in Attachment A, no risk evaluation of Cs-37 or Pb-210 is performed in this document.

4. **Section 3.1.4.4:** Ingestion of surface water and suspended sediments was not evaluated for the swimming and wading scenario, however, these are often included in exposure assessments as the definition of primary contact includes "the possibility of ingestion". Please include more discussion of why the ingestion pathway was not included in the calculations of risk.

5. **Section 3.1.4.5:** There are likely other subsistence fish consumers in the area outside of the Tribal members.

6. **Section 4.3, page 4-2:** The receptor groups that sub chronic Reference Doses (RfDs) were used for should be listed and the risk calculation tables should indicate when sub chronic RfDs were used.

7. **Section 4.5, page 4-4:** Provide the site-specific input parameters used in the Adult Lead Model (ALM). Also, lead concentrations up to 4000 mg/kg have been measured in soil in the residential dataset. Possible hotspots of lead contamination should be evaluated in the risk characterization as averaging lead concentrations over a large area can dilute the exposure concentration.

8. **Section 5:** The exposure assessment indicates that risks for residential receptors will be quantified using three Exposure Point Concentrations (EPCs) – surface and subsurface soil, and 0-3 ft. soil. Risks for all three EPC scenarios should be presented in the risk characterization. Also, the Attachments D, E, and F should list the EPC used. Please check the EPCs used in Attachment D for the resident. For example, the EPC for arsenic

was 5.62 mg/kg; however, in Table B1, the residential EPC for arsenic is 5.34 mg/kg.

9. **Section 5:** Risk summaries should be provided for all receptors, as "a risk manager may also decide that a baseline risk level less than 10^{-4} is unacceptable due to site specific reasons and that remedial action is warranted" (U.S. EPA, April 22, 1991. *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (OSWER DIRECTIVE 9355.0-30).

10. **Section 5.1 Summary RME Table:** The narrative should include language explaining why surface water is not a column in this table. The narrative should also include explanation of which fish sample location results were included in risk calculations. Fish sample locations were not mapped in Figure 5.

11. **Section 5.2:** As shown in Table 20, other noncarcinogenic risk drivers for residents are naphthalene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and benzene. All have Hazard Quotients (HQs) greater than one for the inhalation exposure route.

12. **Section 5.2.2 of HHRA and 7.5.1 of RI/FS:** Maximum concentrations of benzene (230 mg/kg) and benzo(a)pyrene (340 mg/kg) in the 0 to 3 ft bgs depth and 3000 mg/kg in the 3 to 5 ft bgs suggest hotspots of contamination that should be evaluated separately in the risk assessment. The use of a 95% UCL can dilute out these concentrations, resulting in an underestimation of risk.

13. **Section 6.1.1:** The residential risk for the 0-10 foot zone should also be presented in this table. Description of risk as "acceptable" should not be presented in a risk assessment. Determinations of whether risk is acceptable or unacceptable should be left to the risk manager. Please remove the term "acceptable".

14. **Section 6.2.4:** There were very few samples of sediment and air sampled. Unless there is reason to believe the sample collection was very biased, using the maximum concentration as the EPC may overestimate or underestimate risk. An uncertainty analysis should describe assumptions that will both over and underestimate and not only focus on those that will overestimate risk.

15. **Table 11:** The residential Preliminary Remediation Goals (PRGs) should be used to screen COPCs for recreational land use, since children are considered as a recreational user.

16. **Table 20:** When the Hazard Index (HI) exceeds one, the HI should be recalculated by target organ/critical effect.

17. **Attachment A:** Provide a citation for the criteria used to define a volatile compound.

18. **Attachment A, Table 8:** Provide the sediment ingestion rate for an adolescent as was provided for an adult.

19. **Attachment A, Table 11:** The table appears to be mislabeled; the parameters presented

are for a construction worker.

20. **Attachment B1 and B2:** For ease of review, the soil zone and the areas/media for each EPC table and Pro-UCL output should be labeled. The sample location for the maximum detected concentrations and the range of detection limits should be provided in the exposure point concentration summary tables.

21. **Attachment D:** The methods for developing a Particulate Emission Factor (PEF) and a Volatilization Factor (VF) for a commercial/industrial worker and a construction worker presented in EPA (2002) *Supplemental Soil Screening Guidance* (OSWER 9355.4-24) should be used to develop these parameters for the maintenance worker, commercial/industrial worker and construction worker. Using a default PEF and VF does not account for mechanical disturbances (e.g., traffic, grading) that could lead to greater emissions than the default. Note that time interval (T) will change for both the RME and CT estimates of VF and the Q/C will change depending on the receptor and source size. The VF for the residential and recreational receptors also needs to be revised because the time interval needs to be equivalent to the ED. Provide the reference and calculations for the Q/C value selected for Minneapolis.

22. **Attachment D, Summary Tables for receptors and calculations in general:** Were the detected concentrations for the wading beach and on-site sediment values compared to the results of the reference site samples to generate a different set of COPCs? The text needs more narrative explanation of why risk was only calculated for the swimming beach off-site and not the on-site sediments and water.

23. **Attachment D, Table 30b:** The intake equation is incorrect. The VF and PEF terms are not needed when air concentrations are available.

If you have any questions or would like to discuss things further, please contact me at (312) 886-1999.

Sincerely,

Scott K. Hansen
Remedial Project Manager

cc: Dave Trainor, Newfields
Jamie Dunn, WDNR
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Henry Nehls-Lowe, DHFS
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